1939-1947

FORD TRACTOR

with

Ferguson System

Model 9N and 2N

OWNER'S MANUAL

INSTRUCTION BOOK

Harry Ferguson, Inc.

DETROIT 2, MICHIGAN

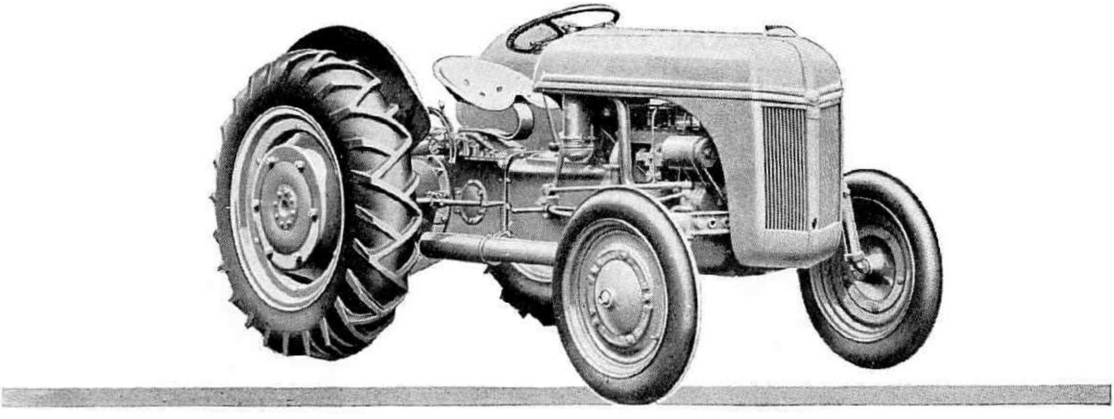
CM011401

INSTRUCTION BOOK

FORD TRACTOR
with
FERGUSON SYSTEM

The Ford tractor with Ferguson system is a fine precision built machine designed for efficient performance, economy and ease of operation. Although it is unusually rugged and capable of giving good service, it should not be abused or neglected. The safety features of the tractor are among its many advantages. However, machinery accidents occur far too frequently on the farm solely because of operator carelessness. The operator is warned to minimize the possibility for accidents by observing a few simple precautions:

1. Do not leave tractor without *FIRST* lowering implement *to the ground.*
2. Do not attempt to pull from the top link connection.
3. Use an adequate shield to protect the power take-off universal joints.
4. Drive slowly in difficult going.
5. Do not attempt to turn sharply using one brake when travelling at high speed.
6. Keep a new tractor on light work for fifty hours.
7. Do not carry anything on the implement.
8. Keep all bolts, studs and nuts tight. This precaution is a general practice with all good operators who have found that it prolongs the life of the tractor by keeping all parts in perfect alignment.



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MAINTENANCE SECTION

In order that the tractor shall give the long and efficient service of which it is capable, certain attention is necessary. This section of the book gives the necessary instructions for this work. In fact, all guarantees expressed or implied are contingent upon these instructions having been carried out.

LUBRICATION

Working Hours

ENGINE CRANKCASE

Examine the dip stick and keep oil up to the "Full" mark every **10**

Change oil in a new engine after the first 30 hours. Thereafter, change the *oil and the oil filter cartridge* whenever the oil begins to show dark on the dip stick, or every **200**

Use S.A.E. 30 for temperatures above 90°F.
S.A.E. 20 for temperatures between 32° and 90°F.
S.A.E. 20W for temperatures between 10° and 32°F.
S.A.E. 10W for temperatures between -10° and 10°F.

Crankcase Capacity 6 quarts.

TRANSMISSION, HYDRAULIC MECHANISM AND DIFFERENTIAL

WARNING: More harm can be done to a tractor in *one hundred hours* with inferior oil than could be done in *thousands* of hours with the correct oil. Insist on getting the exact oil specification as follows:

Examine transmission dip stick and keep oil up to "Full" mark every . **60**

One filler plug located near the shift lever supplies oil to transmission, hydraulic and rear axle.

Change oil in a new tractor after the first 200 hours, thereafter every . **600**

For Temperatures Above Freezing:
STRAIGHT MINERAL OIL—S.A.E. 90

For Temperatures Below Freezing:
STRAIGHT MINERAL OIL—S.A.E. 80

Capacity—5 gallons.
Caution—Drain oil from all three drain plugs.

BELT PULLEY

Examine and refill if necessary every **60**
Fill to high level plug with tractor oil S.A.E. 90.

Working Hours

TIRES AND THEIR CARE

Both *over inflation* and *under inflation* materially shorten tire life. Maintain proper pressure at all times. Check tire pressure every -- 60

Front 26 lbs. Rear 12 lbs.

If water is used for weight in the tires use calcium chloride to prevent freezing as follows: 1⅕ pounds per gallon of water for protection to zero degrees F. and in proportion for other temperatures. Warning: Never use this mixture in engine cooling system.

COOLING SYSTEM

Use clean soft water only. Drain both the radiator and cylinder block in freezing weather or use an antifreeze in accordance with the manufacturer's recommendations. To drain the radiator, loosen the pressure cap to break the vacuum allowing complete drainage. When hot, care should be exercised to allow the steam to escape before the complete removal of the cap. Check radiator every -------------- 10

BATTERY AND ELECTRICAL SYSTEM

Examine and refill the battery with distilled water every---------- 30

An air valve prevents over-filling the battery. Do not depress air valve when filling.

Keep terminals greased to prevent corrosion.

Keep connections tight, and battery clean at all times.

If tractor is idle for 30 days or more, maintain charge in battery by removing to a battery service station or running tractor motor occasionally.

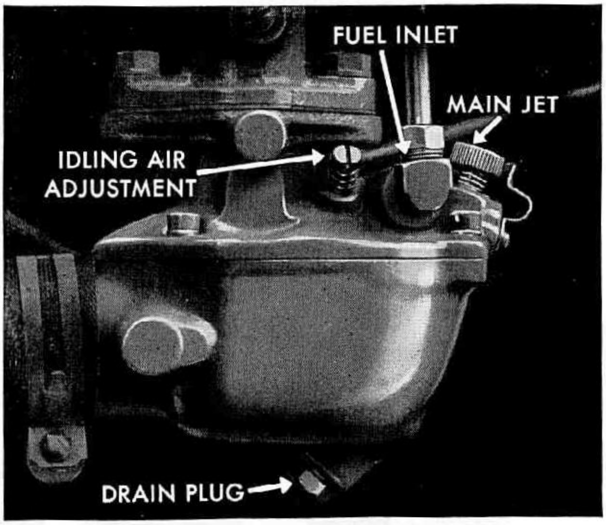
CARBURETOR AND FUEL LINE

Remove drain plug from bottom of carburetor, and drain, every---- 60

To find the approximate correct adjustment of the main jet: Turn the needle gently to the closed position and open one turn. Maximum economy can be obtained by adjusting the carburetor to suit conditions under which the tractor is working. It is not advisable to use too lean a mixture, as it tends to overheat the motor.

The air adjustment jet should be turned in or out until the motor runs smoothly when idling.

See Fuel System.



Working Hours

FRONT WHEEL HUB BEARINGS

Wash clean with kerosene or gasoline and repack with short fibre grease each working season. Renew dust seal if not in good condition.

SPINDLES, ball and socket joints on the ends of each drag link in the steering mechanism, leveling crank gear box and leveling crank thread, use grease gun every ---------------------------- 10

LINKAGE AND FRONT AXLE PIN

Caution. *Do not lubricate ball and socket joints or the pins of the linkage, or front axle pin.*

STEERING COLUMN

Two shots from grease gun every ---------------------------- 10

Warning! Grease *only as directed.* Too much grease will contaminate the transmission oil and may affect the hydraulic mechanism.

GENERATOR BEARING (REAR)

Use a few drops of engine oil every ---------------------------- 300

AIR CLEANER

In normal conditions clean and refill bowl with oil every ------------ 10

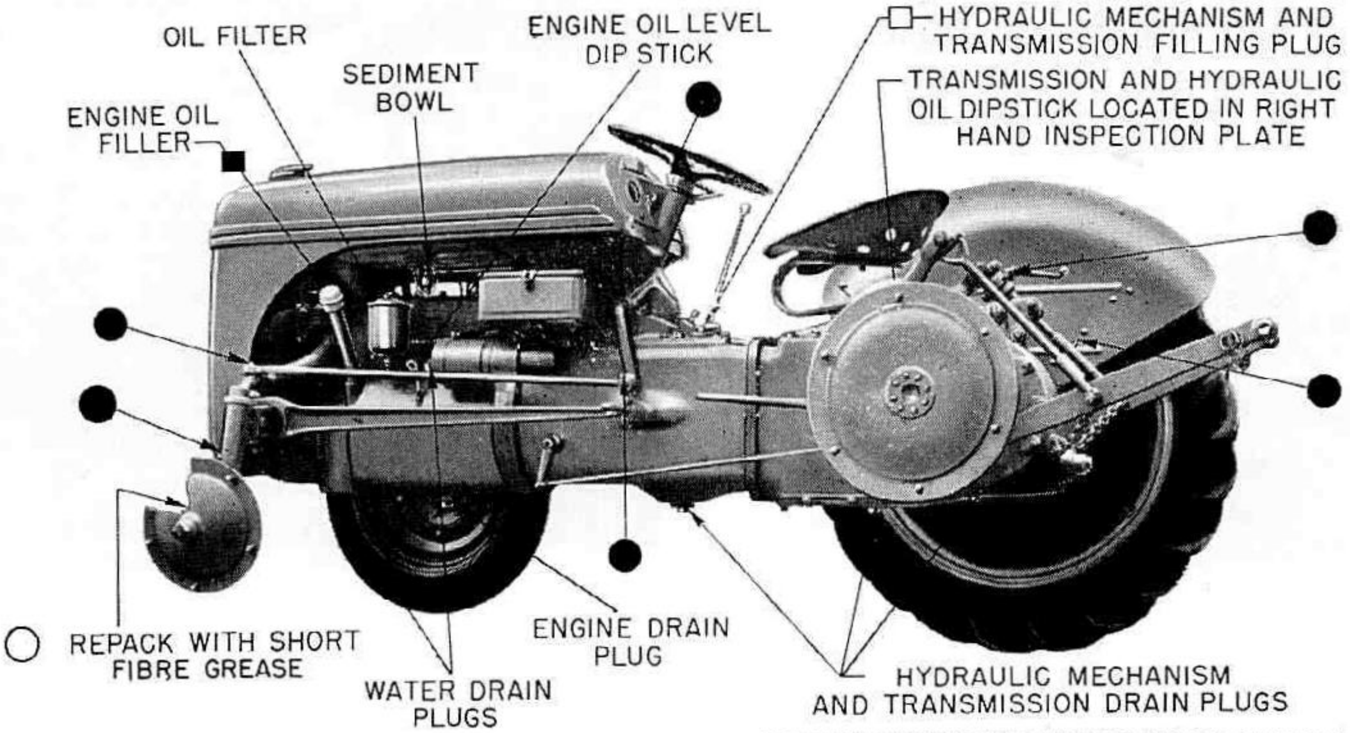
In dusty conditions every -- 5

Use engine oil for servicing.

S.A.E. 30 for summer.
S.A.E. 20 for winter down to 40° F.
S.A.E. 10 for 40° F. to 10° F.
S.A.E. 10 plus kerosene from 10° F. to sub-zero.

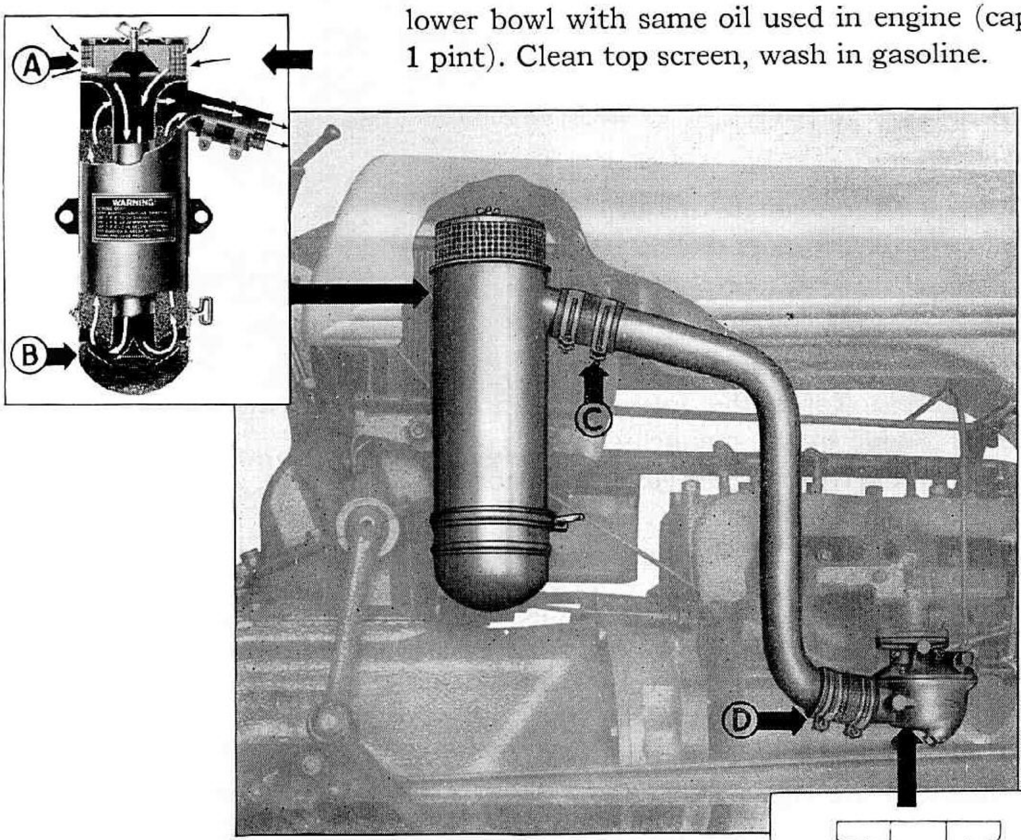
Inspect and clean the screen at the air inlet to the air cleaner every --- 10

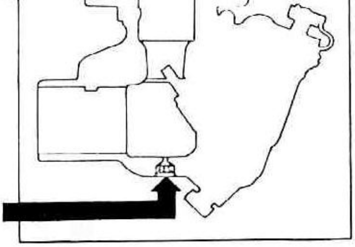
● ***Grease Every Ten Hours***


OIL FILTER
ENGINE OIL LEVEL DIP STICK
□ HYDRAULIC MECHANISM AND TRANSMISSION FILLING PLUG
SEDIMENT BOWL
TRANSMISSION AND HYDRAULIC OIL DIPSTICK LOCATED IN RIGHT HAND INSPECTION PLATE
ENGINE OIL FILLER ■
○ REPACK WITH SHORT FIBRE GREASE
ENGINE DRAIN PLUG
WATER DRAIN PLUGS
HYDRAULIC MECHANISM AND TRANSMISSION DRAIN PLUGS

DO NOT LUBRICATE WHERE NO PROVISION HAS BEEN MADE FOR LUBRICATION

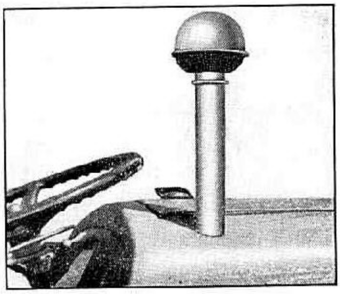
Service the top of the precleaner (A) and the bottom air cleaner bowl (B). Clean daily and refill lower bowl with same oil used in engine (capacity 1 pint). Clean top screen, wash in gasoline.





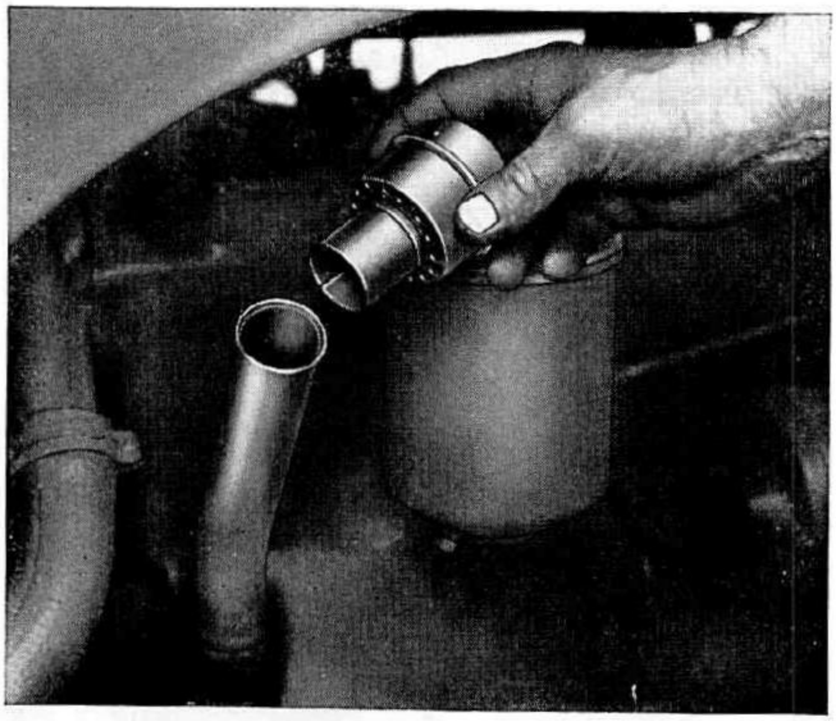
Check the hose connections (C) and (D) and keep them tight.

Keep Filter Packing in Drain Opening of Carburetor. This filter allows manifold condensation and excess fuel to escape. DO NOT PICK OR REMOVE. Removing of this felt packing admits abrasive dirt and grit directly to the engine and may damage the engine in a few days.



In extreme dusty conditions an air cleaner extension draws air from above the most heavily dust laden area.

OIL FILLER CAP



Check the oil filler cap daily. Wash clean with gasoline to insure proper breather action, and to remove accumulation of dirt.

After washing put a few drops of clean oil on the wire mesh, with an oil can.

The filler cap must be kept clean, as it is through this cap that crankcase vapors escape.

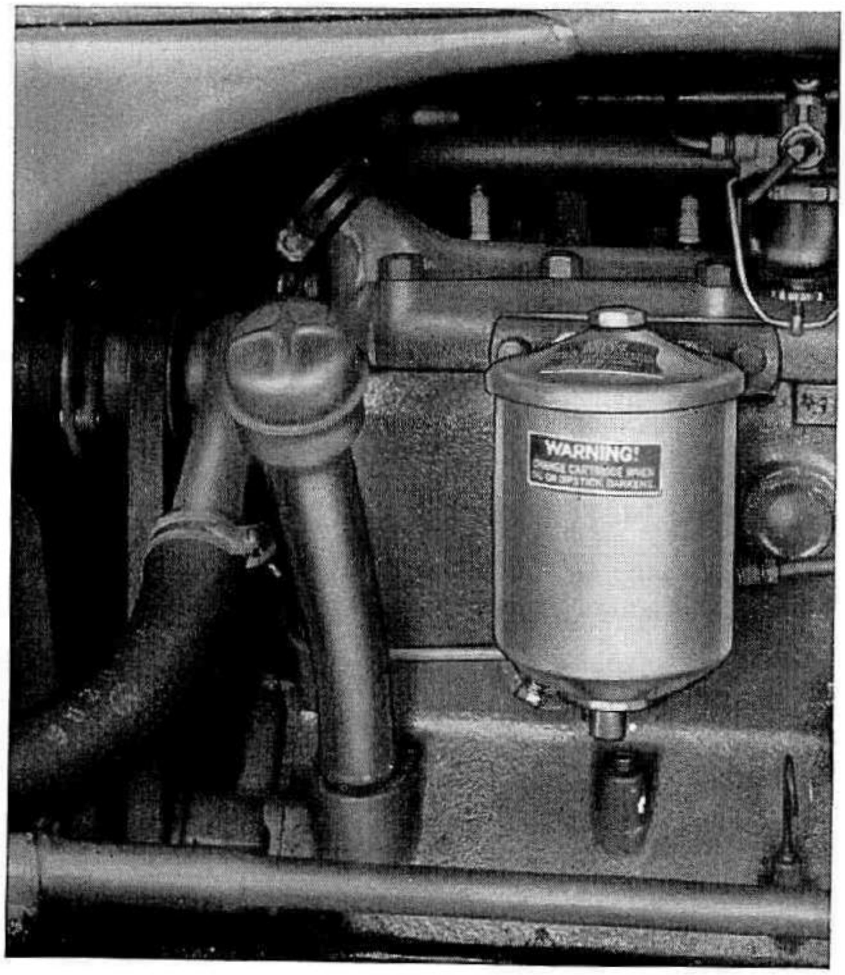
Failure to do so will build up pressure in the crankcase. Retaining vapors in crankcase will contribute towards the formation of sludge in the crankcase, corrosion and rust in the engine, governor and distributor.

OIL FILTER

Change the oil and oil filter cartridge whenever the oil begins to show dark on the dipstick. It should be changed at least every two hundred hours, or more often if dust conditions are abnormal. Make sure in replacing the oil filter cartridge that all connections are tight, that new gaskets are used and fit perfectly.

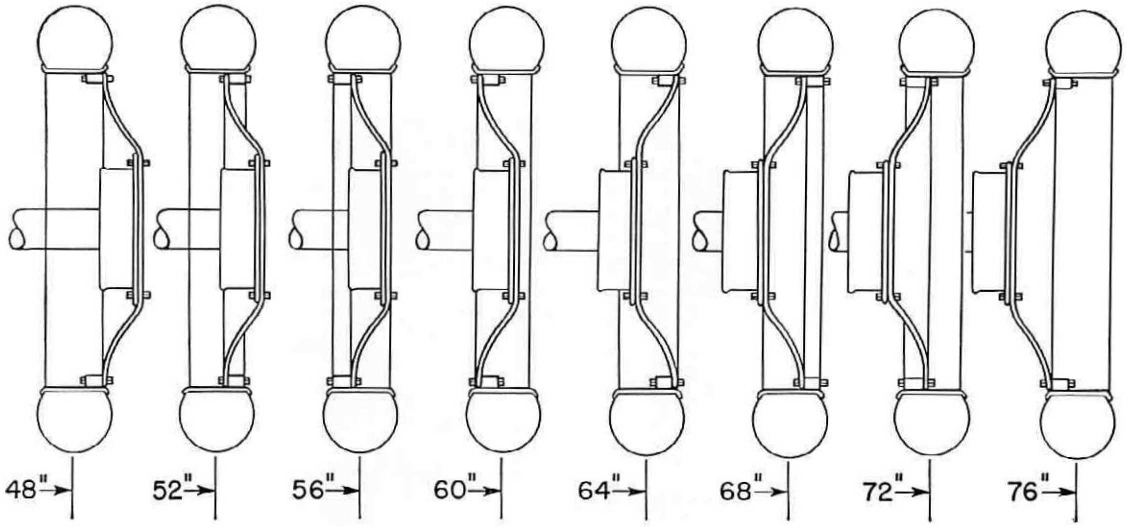
After removing the cartridge from filter take out drain plug on bottom of filter, drawing out as much sludge as possible. To clean filter, replace plug and fill filter about 1/3 full of kerosene or gasoline and clean filter case, remove drain plug and drain.

There are two small holes, one on each side of the stand pipe in filter a little over half way up from the bottom; as long as flushing liquid is kept below these holes, there is no danger of liquid getting into the crankcase.



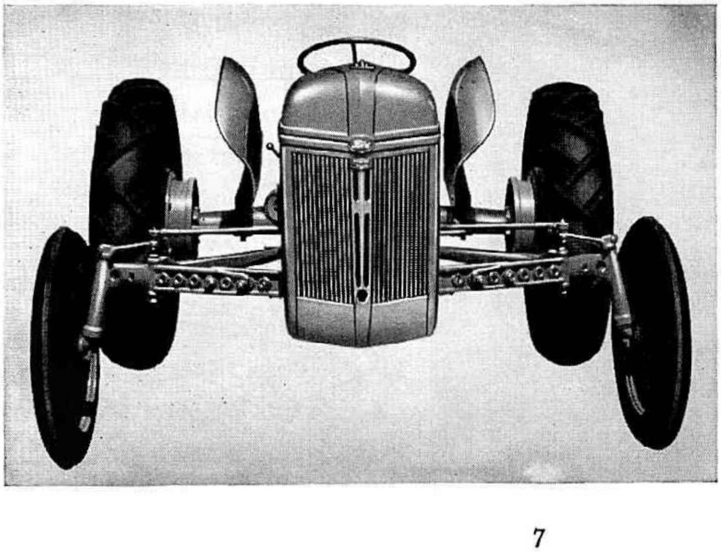
CHANGING THE GAUGE OF THE TRACTOR

The gauge of the rear wheels of the tractor is adjustable by means of assembling the disc and rim in different positions, as shown in drawing below.



Treads of 48, 52, 64, 68 inches are made without changing rear wheels to opposite side of tractor. Treads of 56, 60, 72, 76 inches are made with rear wheels changed to opposite side of tractor, to keep treads running the proper direction. Note: Arrow on sidewall of tire must always point in direction of travel.

The front axle is made in 3 parts and the gauge is adjustable in front from 48″ to 72″ by assembling the three parts of the axle to the proper length. The additional width from 72″ to 76″ is obtained by reversing the front wheels.

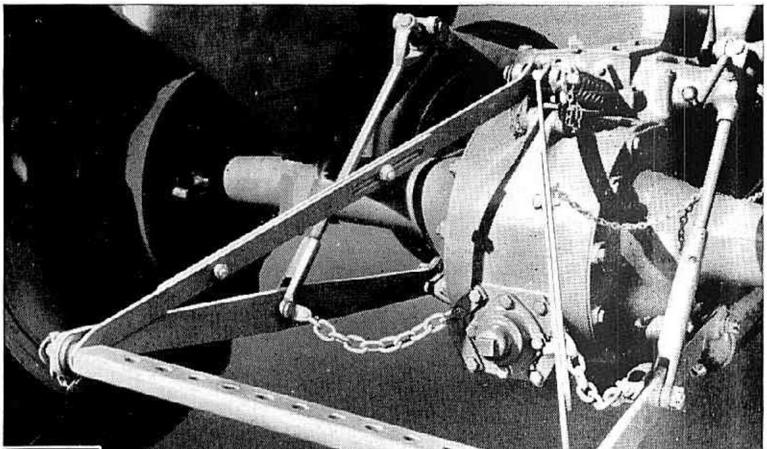


Caution: Loosen the bolt through the radius rod yoke first, then spread axle as desired. No change in the steering connection is necessary. Always assemble the axle with one hole between the bolts holding the halves together, never in adjacent holes.

THE LINKAGE

All connections on the linkage must be kept clean and allowed to move freely. Do not lubricate the ball and socket joints or the pins. Lubricate only the leveling lever gear box and leveling lever thread as indicated in the Maintenance Section.

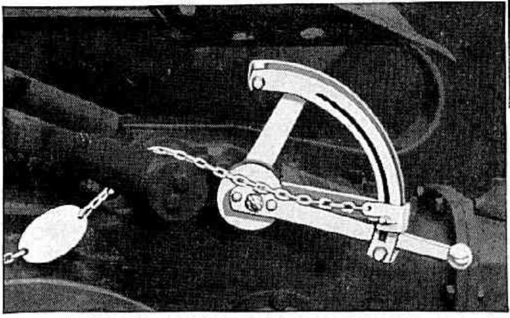
WARNING! *Do not pull from the drawbar until the drawbar stays are in place as illustrated. Do not pull from the top link or master control spring rocker clevice under any conditions.*



THE ADJUSTABLE DRAWBAR

with stays in place.

Illustration below shows Safety Wedge on Quadrant.

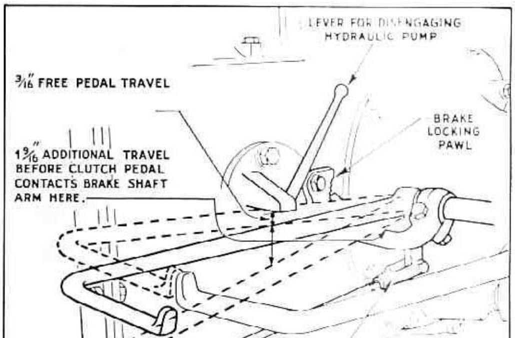


The drawbar is attached as shown. The standard setting is 18″ from the drawbar to the ground but it may be easily adjusted up or down to suit different pull type implements.

Caution: Be sure the hydraulic control lever is locked down with the stop as shown, and the pump thrown out of gear when the power take-off is not used.

THE CLUTCH PEDAL

The clutch pedal should be adjusted as shown: $\frac{3}{16}''$ of free pedal travel as shown. $1\frac{9}{16}''$ in addition for disengaging the clutch. Bring the brake pick-up arm into contact with the pedal at the proper position as shown.


LEVER FOR DISENGAGING HYDRAULIC PUMP
3/16″ FREE PEDAL TRAVEL
BRAKE LOCKING PAWL
1 9/16″ ADDITIONAL TRAVEL BEFORE CLUTCH PEDAL CONTACTS BRAKE SHAFT ARM HERE.
CLEVIS FOR CLUTCH ADJUSTMENT

THE HYDRAULIC MECHANISM

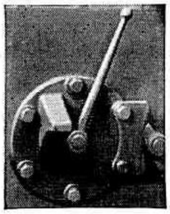
The hydraulic mechanism, which automatically controls the implements, is built into the tractor and operates while submerged in oil. It requires no special attention.

WARNING: *Do not leave tractor without first lowering implement to the ground.*

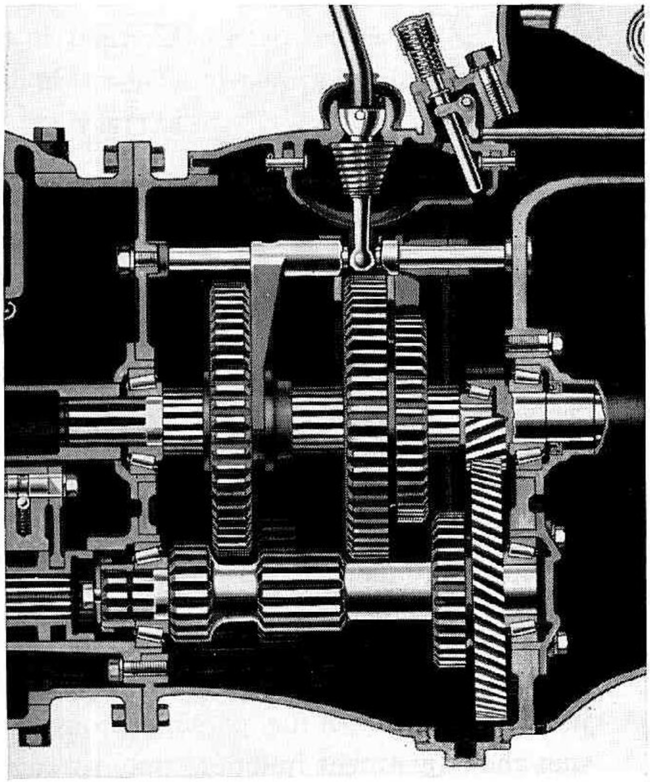
TRANSMISSION

The transmission has three speeds forward and one reverse with ratios and speeds given—

Low	2⅝ M.P.H. at 1500, Ratio	73.3–1
2nd	3½ M.P.H. at 1500, Ratio	57.0–1
3rd	8 M.P.H. at 1500, Ratio	24.6–1
Rev.	2⅞ M.P.H. at 1500, Ratio	68.4–1

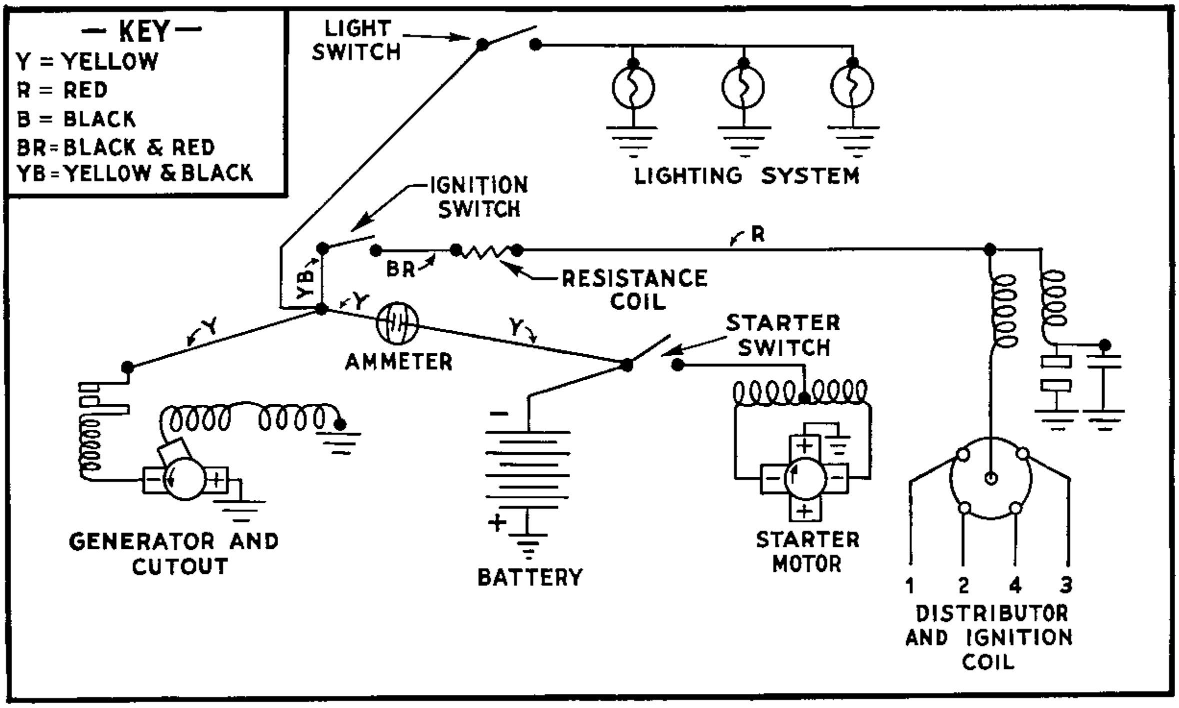


All bearings are tapered roller, anti-friction type except the reverse idler gear. The pump for the hydraulic mechanism is driven by the power take-off shaft, and the two as a unit are thrown in and out of gear by the lever on the left side transmission inspection case—the down and back position of the lever being the engaged position. The up and forward position is the disengaged position. The power take-off shaft runs at 4/11 of the engine speed. 1500 R.P.M. of the motor gives a power take-off speed of 545 R.P.M.



THE ELECTRICAL SYSTEM

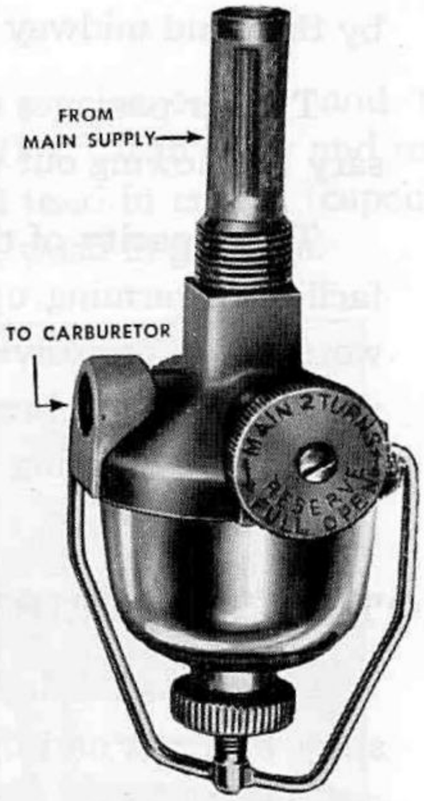
The energy for starting, lighting, and ignition is supplied by a 6-volt battery and generator, shown below with connections. The charging rate of the generator is adjustable by 3rd brush rotation—the maximum rate being 16 amps. The correct spark-plug gap is .024″ to .029″. The correct plug is Champion, 14mm, No. H-10. The breaker points in the distributor should be adjusted to .015 and inspected occasionally.



THE FUEL SYSTEM (Gasoline Only)

Fuel is supplied by gravity from a tank under the cowl to the carburetor. Only one tank is provided. By means of a two-way valve, fuel can be drawn from the tank at the bottom or from an opening in a short standpipe. Thus a portion of the fuel (1 gallon) can be held in reserve for emergencies. The tank holds a total of ten gallons.

The carburetor has two adjustments—the idling air adjustment and the main jet. The quantity of fuel passing through the main jet is limited by a fixed jet so that the adjustment functions only through a range sufficiently broad to provide for operation in different conditions; thus the adjustment cannot be thrown completely off. The approximately correct adjustment for the main jet is open one full turn from the closed position. Further refinements of the adjustments are determined by observing the operation of the motor. The proper fuel for the tractor is gasoline with a minimum octane number of 70.



When it is desirable to disassemble the carburetor, always remove it from the manifold first; remove the main jet adjusting screw, then disassemble in the normal manner. Never attempt to blow out a carburetor by connecting an air line to the fuel inlet—always disassemble and blow out the parts individually.

Do not permit any air leaks to occur between the air cleaner and carburetor.

When tractor is to be idle for 30 days or more, drain the entire fuel system including the gasoline tank. Fuel should be removed through bottom of carburetor, with sediment bulb valve on "reserve." Gasoline, when stored, forms a gum which has a tendency to clog up the small openings in the carburetor. For the same reason, do not use gasoline which has been stored in the tractor for more than 60 days.

Clean sediment bulb when sediment collects.

THE GOVERNOR

The governor is lubricated by clean oil direct from the oil filter. The governor functions through the entire speed range from 400 to 2,000 rpm. All settings can be made from the tractor seat by moving the hand throttle. The connections between the governor and carburetor should be kept free and clean so that it will operate smoothly.

THE COOLING SYSTEM

The cooling system, consisting of a tubular radiator with shroud, pressure cap, fan, pump, and connections, needs no special attention. The centrifugal type water pump has prelubricated bearings and needs no lubrication or other attention. The fan belt should be maintained at the proper tension at all times, the method of adjustment is by the spring mounted on the generator to the front cylinder head bolt; to tighten, turn the bolt in the spring counter-clockwise; to loosen turn clockwise.

The tension of the belt is proper when it can be depressed about one inch by the hand midway between the generator and fan belt pulleys.

The air passages through the radiator should be cleaned of trash when necessary by blowing out with an air hose.

The capacity of the cooling system is 12 quarts. A thermostat is provided to facilitate warming up. The use of a good rust inhibitor is recommended where water with corrosive properties is used. To drain radiator, always loosen the radiator cap to break vacuum. *Caution:* When radiator is hot, carefully loosen cap, allowing pressure to escape before complete removal.

MOTOR AND LUBRICATION

The motor is lubricated by pressure feed to the main, connecting rod and camshaft bearings and by splash to other parts. The gear type oil pump housing is cast integral with the front main bearing cap and is driven from the crankshaft gear of the timing gear set. The oil pressure relief and regulating valve lifts at 30 pounds pressure, which will show a gauge pressure from 15 to 30 lbs. on the instrument panel, depending on the temperatures of the oil and speed of the motor.

Refer to the section on specifications for details on the construction of the motor.

Keep the tractor clean and free of an accumulation of dirt, grease, etc., by an occasional cleaning.

●

All references to liquid measurements in this book are expressed in U.S. units. One U.S. gallon is approximately 4/5 of one British Imperial gallon.

EXTRA EQUIPMENT AT ADDITIONAL COST

BELT PULLEY—Carried by self-contained drive unit quickly attachable to rear of tractor. Pulley diameter—9", width 6.5". Speed—1352 rpm, belt speed—3190 ft. per minute at 2000 rpm engine speed. Pulley gear ratio to power take-off shaft 1.86. Rotates in either direction.

STANDARD A.S.A.E. POWER TAKE-OFF ADAPTER with safety shield is a self-contained drive unit quickly attachable. Has standard A. S. A. E. spline shaft 1.375". Shaft speed of 545 rpm at 1500 rpm engine speed. Engine to shaft ratio - 2.75 to 1.

LIGHTING KIT—Includes 2 headlamps, tail lamp with license plate bracket, switch and all necessary wiring.

SPECIFICATIONS

ENGINE—Four cylinder L-head. Bore 3.187 x 3.75. Piston displacement 120 cu. in. Compression ratio 6 to 1.

HORSE POWER—Maximum belt hp—23.87. Rated belt hp. (85% of maximum)—20.29. Drawbar—2-14″ plow capacity with Ferguson hydraulically operated implements. Maximum draw bar without Ferguson hydraulic system of control—16.90 hp Rated draw bar hp (75% of maximum)—12.68.

GOVERNOR—Variable speed, mechanically operated, centrifugal type. Governor regulation from 400 to 2000 rpm.

LUBRICATION—By gear pump supplying direct pressure oiling to crankshaft, camshaft and connecting rod bearings, also to timing gears. Crankcase oil capacity—6 quarts.

OIL FILTER—Replaceable cartridge type of large capacity.

IGNITION—Direct-driven distributor in unit with coil in waterproof housing. Fully automatic spark advance.

GENERATOR—6-volt type with third brush control.

STARTER—6-volt conventional type automobile starter. Safety starter switch mechanically interlocked with gear shift lever.

BATTERY—6-volt—85 ampere-hour capacity—13 high plates.

COOLING—Pump circulation of water through tube and fin type of radiator with pressure system. Fan—6-blade 16″ driven by belt. Pump is packless type with prelubricated bearings. Cooling system capacity—12 U.S. quarts.

FUEL SUPPLY—Welded steel tank carried in engine hood, capacity 10 gallons. By means of a two-way valve on sediment bulb, 1 gallon can be held in reserve for emergencies.

CARBURETOR—Up draft, plain tube type of sturdy, dustproof construction.

AIR CLEANER—Oil bath type with dust receptacle easily removable for cleaning.

MUFFLER—Reverse-flow type. Fitted as standard equipment to carry exhaust to the rear of the tractor.

CLUTCH—Single dry plate 9″ effective diameter. Clutch plate pressure increased by centrifugal force as engine speed is increased.

TRANSMISSION—Sliding gear—3 speeds forward and one reverse. All shafts mounted on tapered roller bearings.

FINAL DRIVE—Spiral bevel gear drive with straddle-mounted pinion 6.66 to 1 ratio. Four pinion differential mounted on tapered roller bearings. Drive axle of the semi-floating type with integral axle shafts and wheel hubs, also mounted on tapered roller bearings.

TRANSMISSION SPEEDS

	Final Gear Reduction	Speeds At 1500 RPM	Speeds At 2000 RPM
Low	73.3 to 1	2⅝ mph	4 mph
Intermediate (plowing)	57 to 1	3½ mph	5⅛ mph
High	24.6 to 1	8 mph	11¾ mph
Reverse	68.4 to 1	2⅞ mph	

STEERING—Bevel pinion and twin bevel sectors controlling both front wheels independently. Tread of front axle adjustable without disturbing any steering connections. Rubber covered steel steering wheel 18″ diameter.

POWER TAKE - OFF SHAFT for Ferguson Equipment extends from rear of axle housing—1.125″ spline. Shaft speed of 545 rpm at engine speed of 1500 rpm.

BRAKES—14″ x 2″ internal expanding, two-shoe, fully energizing type. One simple accessible adjustment on each brake. Brakes operate independently on each rear wheel controlled by separate pedals to facilitate short turning.

WHEELS—Front—Steel disc fitted with 4x19 single rib pneumatic tires on drop center rim, 26 lbs. tire pressure. Rear—Steel disc fitted with 10x28 traction tread pneumatic tires on drop center rim, 12 lbs. tire pressure.

HYDRAULIC IMPLEMENT CONTROL—Consists of 4 cylinder pump supplying oil under suitable pressure to ram cylinder. Valve has manual and automatic control. Control lever convenient to the operator's right hand gives him instant control of the implement.

DRAWBAR—Adjustable type. Included as standard equipment.

DIMENSIONS of Tractor—Wheelbase—70″.

Normal Tread—Front 48″ and rear 52″.

Front Tread—Adjustable, by means of extending axle ends and reversing front wheel discs, to 76″ in 4″ steps.

Rear Tread—Adjustable, by means of reversible wheel disc and reversible tire rims, to 76″ in 4″ steps.

Over-all length—Front tire fin to end of lower link—115″.

Over-all width—64″.

Over-all height—52″.

Ground clearance—13″ under center. 21″ under axles.

Turning circle—16 ft. diameter with use of brakes.

The Ford Motor Company, whose policy is one of continuous improvement, reserves the right to change specifications, design, or prices, without incurring obligation.

A FEW OF THE IMPLEMENTS THE FORD-FERGUSON OPERATES

The manufacture of this tractor and its equipment will become by far the largest industry in the world. It will create employment for millions of people, and offer endless opportunity for youth and capital.

The slavery will be taken out of agriculture. It will become attractive and profitable and put an end to the disastrous drift of youth from the land.

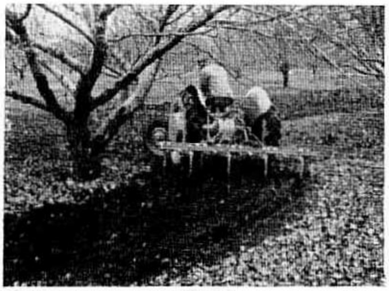
Cultivating

Middlebusting

Ridging

Plowing

Planting



Tilling

WARRANTY

The Ford Motor Company warrants all such parts of new Ford tractors, EXCEPT TIRES, for a period of ninety (90) days from the date of original delivery to the purchaser of each new Ford tractor, as shall, under normal use and service, appear to it to have been defective in workmanship or material. This warranty shall be limited to shipment to the purchaser without charge, except for transportation, of the part or parts intended to replace those acknowledged by the Ford Motor Company to be defective. The Ford Motor Company cannot, however, and does not accept any responsibility in connection with any of its tractors when they have been altered outside of its own factories or branch plants. If the purchaser shall use or allow to be used in the tractor, parts not made or supplied by the Ford Motor Company, then this warranty shall become void. The Ford Motor Company does not undertake responsibility to any purchaser of its products for any undertaking, representation or warranty made by anyone selling its products beyond those herein expressed.

The Ford Motor Company reserves the right to make changes in design and changes or improvements upon its product without imposing any obligation upon itself to install the same upon its products theretofore manufactured.

TIRE WARRANTY

Every tractor tire manufactured by the Ford Motor Company, bearing its name and serial number and used in farm service and agriculture, is warranted by it to be free from defects in workmanship and material without limit as to time or mileage and to give satisfactory service under normal operating conditions. If the Ford Motor Company's examination shows that any tire has failed under the terms of this warranty, it will at its option either repair the tire or make an allowance on the purchase of a new tire.

FORD MOTOR COMPANY

FORM Z 3035-D

PTD. IN U.S.A.

Ford Tractor
FERGUSON SYSTEM

SERIAL NUMBERS
Ford Tractors

YEAR	BEGINNING SERIAL NUMBER	YEAR	BEGINNING SERIAL NUMBER
9N		2N	
1939	1	1943	105375
1940	10234	1944	126538
1941	46876	1945	169982
1942	88888	1946	198731
1942	99412	1947	258504